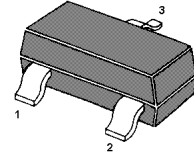


# MMBT5401

## PNP Silicon Epitaxial Planar Transistor

for high voltage amplifier applications



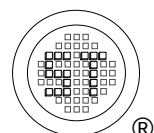
1. Base 2. Emitter 3. Collector  
TO-236 Plastic Package

### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

| Parameter                    | Symbol            | Value         | Unit             |
|------------------------------|-------------------|---------------|------------------|
| Collector Base Voltage       | $-V_{\text{CBO}}$ | 160           | V                |
| Collector Emitter Voltage    | $-V_{\text{CEO}}$ | 150           | V                |
| Emitter Base Voltage         | $-V_{\text{EBO}}$ | 5             | V                |
| Collector Current Continuous | $-I_{\text{C}}$   | 600           | mA               |
| Power Dissipation            | $P_{\text{tot}}$  | 350           | mW               |
| Junction Temperature         | $T_{\text{j}}$    | 150           | $^\circ\text{C}$ |
| Storage Temperature Range    | $T_{\text{stg}}$  | - 55 to + 150 | $^\circ\text{C}$ |

### Characteristics at $T_a = 25^\circ\text{C}$

| Parameter                                                                                                                                                                                                                     | Symbol                                                | Min.           | Max.          | Unit        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------|---------------|-------------|
| DC Current Gain<br>at $-V_{\text{CE}} = 5\text{ V}$ , $-I_{\text{C}} = 1\text{ mA}$<br>at $-V_{\text{CE}} = 5\text{ V}$ , $-I_{\text{C}} = 10\text{ mA}$<br>at $-V_{\text{CE}} = 5\text{ V}$ , $-I_{\text{C}} = 50\text{ mA}$ | $h_{\text{FE}}$<br>$h_{\text{FE}}$<br>$h_{\text{FE}}$ | 50<br>60<br>50 | -<br>240<br>- | -<br>-<br>- |
| Collector Base Cutoff Current<br>at $-V_{\text{CB}} = 120\text{ V}$                                                                                                                                                           | $-I_{\text{CBO}}$                                     | -              | 50            | nA          |
| Emitter Base Cutoff Current<br>at $-V_{\text{EB}} = 3\text{ V}$                                                                                                                                                               | $-I_{\text{EBO}}$                                     | -              | 50            | nA          |
| Collector Base Breakdown Voltage<br>at $-I_{\text{C}} = 100\text{ }\mu\text{A}$                                                                                                                                               | $-V_{(\text{BR})\text{CBO}}$                          | 160            | -             | V           |
| Collector Emitter Breakdown Voltage<br>at $-I_{\text{C}} = 1\text{ mA}$                                                                                                                                                       | $-V_{(\text{BR})\text{CEO}}$                          | 150            | -             | V           |
| Emitter Base Breakdown Voltage<br>at $-I_{\text{E}} = 10\text{ }\mu\text{A}$                                                                                                                                                  | $-V_{(\text{BR})\text{EBO}}$                          | 5              | -             | V           |
| Collector Emitter Saturation Voltage<br>at $-I_{\text{C}} = 10\text{ mA}$ , $-I_{\text{B}} = 1\text{ mA}$<br>at $-I_{\text{C}} = 50\text{ mA}$ , $-I_{\text{B}} = 5\text{ mA}$                                                | $-V_{\text{CE}(\text{sat})}$                          | -<br>-         | 0.2<br>0.5    | V           |
| Base Emitter Saturation Voltage<br>at $-I_{\text{C}} = 10\text{ mA}$ , $-I_{\text{B}} = 1\text{ mA}$<br>at $-I_{\text{C}} = 50\text{ mA}$ , $-I_{\text{B}} = 5\text{ mA}$                                                     | $-V_{\text{BE}(\text{sat})}$                          | -<br>-         | 1<br>1        | V           |
| Gain Bandwidth Product<br>at $-V_{\text{CE}} = 10\text{ V}$ , $-I_{\text{C}} = 10\text{ mA}$ , $f = 100\text{ MHz}$                                                                                                           | $f_{\text{T}}$                                        | 100            | 300           | MHz         |
| Output Capacitance<br>at $-V_{\text{CB}} = 10\text{ V}$ , $f = 1\text{ MHz}$                                                                                                                                                  | $C_{\text{obo}}$                                      | -              | 6             | pF          |



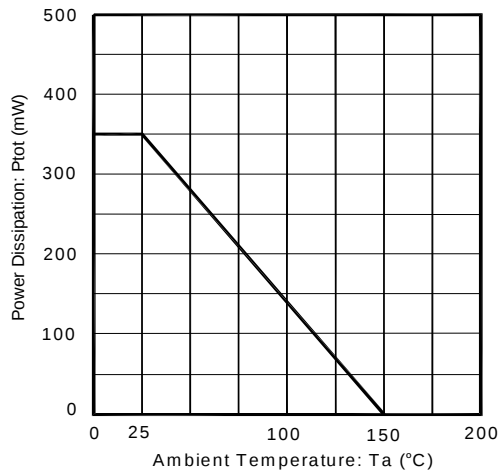


Fig. 1 Power Derating Curve

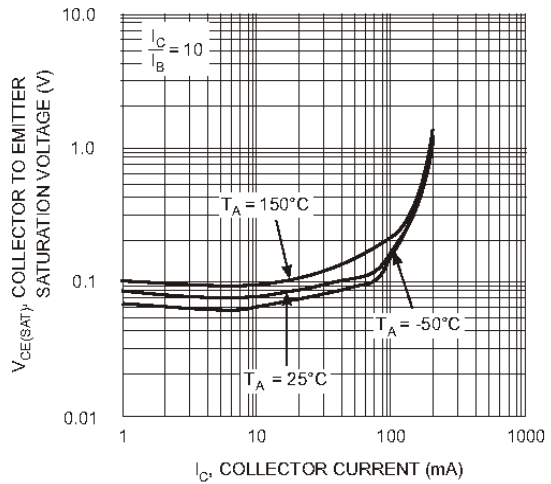


Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current

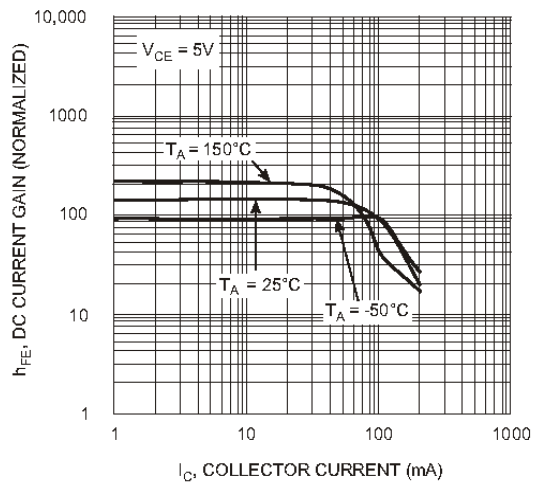


Fig. 3, DC Current Gain vs. Collector Current

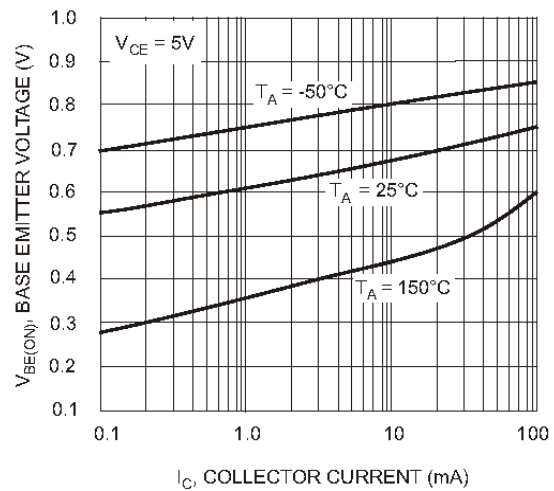


Fig. 4, Base Emitter Voltage vs. Collector Current

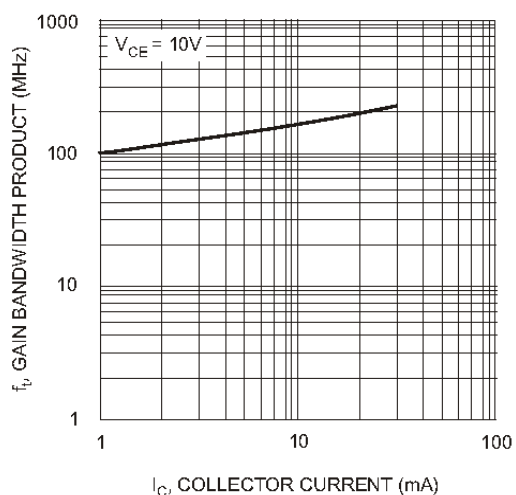


Fig. 5, Gain Bandwidth Product vs. Collector Current

